

IN THE CLAIMS

1. (Currently amended) A method for cleaning a ~~deposition~~ chamber which has a metal oxide attached therein, the method comprising:

providing a first gas into the ~~deposition~~ a chamber having a metal oxide attached therein, the first gas being a gas which reacts with [[the]] a metal included in the metal oxide to generate a reacting residue, wherein the ~~deposition~~ chamber does not contain a plasma;

providing a second gas into the ~~deposition~~ chamber, the second gas being a gas which decomposes the reacting residue, wherein the second gas includes water (H_2O) vapor; and

removing the decomposed reacting residue from the chamber,
whereby the metal oxide is removed from the chamber.

2. (Original) The method of claim 1, wherein the first gas includes a fluorine-containing gas.

3. (Original) The method of claim 2, wherein the fluorine-containing gas includes a hydrogen fluoride (HF) gas, a fluorine (F₂) gas, or a sulfur hexafluoride (SF₆) gas.

4-6. (Cancelled)

7. (Currently amended) The method of claim 1, further comprising exciting the first gas and the second gas outside of the ~~deposition~~ chamber before providing the first gas and the second gas into the ~~deposition~~ chamber.

8. (Currently amended) The method of claim 1, wherein the ~~deposition~~ chamber has a temperature of about 50 to about 650°C.

9. (Currently amended) The method of claim 1, wherein the ~~deposition~~ chamber has a pressure of about 0.1 to about 100 Torr.

10. (Original) The method of claim 1, wherein the metal oxide includes aluminum oxide (Al₂O₃).

11. (Currently amended) The method of claim 1, wherein the first gas and the second gas are concurrently provided into the ~~deposition~~ chamber through separate gas supply lines.

12. (Currently amended) The method of claim 1, wherein the first gas and the second gas are mixed in one gas supply line and are concurrently provided into the ~~deposition~~ chamber.

13. (Currently amended) The method of claim 1, wherein providing the first gas and the second gas further comprises:

providing the first gas into the ~~deposition~~ chamber for a predetermined time; and
periodically providing the second gas into the ~~deposition~~ chamber during [[that]] the same time that the first gas is provided.

14. (Currently amended) The method of claim 1, wherein providing the first gas and the second gas further comprises:

providing the second gas into the ~~deposition~~ chamber; and
periodically providing the first gas into the ~~deposition~~ chamber during [[that]] the same time that the second gas is provided.

15. (Currently amended) The method of claim 1, wherein the first gas and the second gas are alternatively provided into the ~~deposition~~ chamber.

16. (Currently amended) A method for cleaning a ~~deposition~~ chamber, the method comprising:

providing a fluorine-containing gas and a water vapor into ~~the deposition~~ a chamber including ~~an aluminum~~ metal oxide attached therein, wherein the fluorine-containing gas is reacted with ~~an aluminum~~ metal included in the ~~aluminum~~ metal oxide to generate reacting residues and the water vapor decomposes the reacting residues, and wherein at least one of the fluorine-containing gas and the water vapor is continuously flowed into the ~~deposition~~ chamber during a cleaning process while maintaining the ~~deposition~~ chamber at a pressure of ~~greater than between~~ 1 Torr and about 100 Torr;

whereby the ~~aluminum~~ metal oxide is removed from the ~~deposition~~ chamber by reacting the ~~aluminum~~ metal oxide with the fluorine-containing gas and the water vapor.

17. (Currently amended) The method of claim 16, wherein providing the fluorine-containing gas and the water vapor further comprises:

providing the fluorine-containing gas into the ~~deposition~~ chamber; and

periodically providing the water vapor into the ~~deposition~~ chamber during the same time that the fluorine-containing gas is provided.

18. (Currently amended) The method of claim 16, wherein providing the fluorine-containing gas and the water vapor further comprises:

providing the water vapor into the ~~deposition~~ chamber; and

periodically providing the fluorine-containing gas into the ~~deposition~~ chamber during the same time that the water vapor is provided.

19. (Currently amended) A method for cleaning a ~~deposition~~ chamber, the method comprising:

alternatively providing a fluorine-containing gas and a water vapor into the ~~deposition~~ a chamber including ~~an aluminum~~ metal oxide attached therein, wherein the fluorine-containing gas is reacted with ~~an aluminum~~ metal included in the ~~aluminum~~ metal oxide while maintaining the ~~deposition~~ chamber at a pressure of greater than between 1 Torr and about 100 Torr to generate reacting residues and the water vapor decomposes the reacting residues; and

removing the ~~aluminum~~ metal oxide from the ~~deposition~~ chamber by reacting the ~~aluminum~~ metal oxide with the fluorine-containing gas and the water vapor.

20-21. (Cancelled)

22. (Currently amended) A method for cleaning a ~~deposition~~ chamber, the method comprising:

providing a first gas and a second gas into the ~~deposition~~ a chamber with metal oxide attached therein, wherein the ~~deposition~~ chamber does not contain a plasma;

reacting the first gas with a metal included in the metal oxide to generate a reacting residue;

decomposing the reacting residue with the second gas, wherein the second gas includes water (H_2O) vapor; and

removing the decomposed reacting residue through an exhaust line.

23. (Original) The method of claim 22, wherein the first gas includes a fluorine-containing gas.

24. (Cancelled)

25. (Currently amended) A method for cleaning a chamber ~~which has a metal oxide attached to an inside surface thereof~~, the method comprising:

providing a first gas into [[the]] a chamber having a metal oxide attached to an inside surface thereof, the first gas being a gas which reacts with ~~the first~~ a metal included in the metal oxide to generate a reacting residue, wherein the chamber does not contain a plasma;

providing a second gas into the chamber, the second gas being a gas which decomposes the reacting residue, wherein the second gas includes water (H_2O) vapor; and

removing the decomposed reacting residue from the chamber.

26. (Currently amended) A method for cleaning a ~~deposition~~ chamber ~~which has a metal oxide attached therein~~, the method comprising:

maintaining a pressure in ~~the deposition~~ a chamber having a metal oxide attached therein ~~of greater than~~ between 1 Torr and about 100 Torr;

providing a first gas into the ~~deposition~~ chamber, the first gas being a gas which reacts with a metal included in the metal oxide to generate a reacting residue, wherein the ~~deposition~~ chamber does not contain a plasma;

providing a second gas into the ~~deposition~~ chamber, the second gas being a gas which decomposes the reacting residue, wherein the second gas includes water (H_2O) vapor; and

removing the decomposed reacting residue from the chamber,
whereby the metal oxide is removed from the chamber.

27. (New) A method for cleaning a chamber, the method comprising:

providing a first gas into a chamber having a metal oxide attached therein, the first gas being a gas which reacts with a metal included in the metal oxide to generate a reacting residue, wherein the chamber does not contain a plasma;

providing a second gas into the chamber, the second gas being a gas which decomposes the reacting residue; and

providing at least one additional gas selected of a nitric acid (HNO_3) gas and an alcohol-containing gas into the chamber, the additional gas diluting the first and second gases to reduce the removal rate of the metal oxide; and

removing the decomposed reacting residue from the chamber,
whereby the metal oxide is removed from the chamber.